

Then it would come to rest at any point, there seeming not to be any choice in the location. Amoeboid movements would begin as described above for the cell which was first seen passing through the ostiolum. The extended process would feel about over the inner surface of the wall for the desired opening. After a few moments of vain search, if it did not happen to be located at the ostiolum, it would assume the rounded form again, dart violently away and repeat the circular gyrations. Frequently as it swept across the field it seemed to be of a somewhat flattened form, but this may have been due to slight amoeboid movement during the swarming, produced by the unequal pressure in the water encountered in turning suddenly at a different angle. Again it would come to rest and by amoeboid movements search for the ostiolum, and, failing, would again swarm violently about for another period. This would be kept up until the cell happened to rest close by the ostiolum when by amoeboid movements the search would be rewarded by finding the passage, when the issuance would be slowly made.—GEO. F. ATKINSON, *Cornell University, Ithaca, N. Y.*

**The wild rice of Minnesota.**—In a recent conversation with Dr. Elliott Coues, the well known naturalist, who had just returned from a visit to the head-waters of the Mississippi, some interesting information with regard to wild rice was brought out and in response to my request for some written notes on the subject Dr. Coues forwarded the appended account of the plant. When it is known that the 32,000 Ojibwa Indians depend upon the native wild rice of northern Minnesota as their staple article of vegetable food, the importance of this plant from an economic stand point is at once apparent, and these facts are suggestive of its further commercial utilization.—FREDERICK V. COVILLE, *Washington, D. C.*

WASHINGTON, D. C., Oct. 28, 1894.

*Dear Sir:*

Referring to our conversation of yesterday, on the wild rice or *Zizania aquatica*, I was somewhat surprised to be informed that there was anything not generally known about this plant in the observations which I made during my recent canoe-voyage to the sources of the Mississippi river. I comply with pleasure with your request for some notes on this subject.

Wild rice figures as a staple food-product in the earliest historical accounts we have of the various Indian tribes which then inhabited northern Wisconsin and Minnesota. One of these is in fact named from this circumstance. But it would be a great mistake to presume that the case is entirely different now. Rice continues to be a staple commodity among all the bands of Ojibwa Indians on the reservations in Minnesota, both for their own consumption and for sale or barter. It has a quotable commercial value with the traders. The

article is so well known and generally used that it is found convenient in the trade to distinguish our cultivated rice, *Oryza sativa*, as "white rice." During my trip, I subsisted in part on Indian rice, as it is generally called, which I bought of a trader, as one may purchase cultivated rice of his grocer in this city. In northern Minnesota the whites have invented the verb "to rice," and speak of "ricing," i. e., harvesting the crop of wild rice.

This plant grows in profusion nearly throughout the region I traversed in northern Minnesota. Its ubiquity is attested by the unusual number of lakes, rivers, and creeks which are geographically known by its name. Any lake where the plant occurs in harvestable abundance is a "rice lake," whence the transition to Rice Lake as a specific designation is easy and natural. I should imagine this geographical name to be duplicated a score or more times in Minnesota alone, to the great annoyance or confusion of geographers. Many of these waters are also alternatively known by the corresponding Indian name Manomin, in several of the different forms in which this word is spelled by the whites. I never heard the plant called "oats;" it is always "Indian rice," or "wild rice," or simply "rice."

*Zizania aquatica* is specially luxuriant in still or slow waters with rich muddy bottoms, and grows more sparsely or not at all in grounds where the current quickens or the soil is sandy, or both. Hence it is rather a plant of the lakes than of the streams. I speak more particularly of its growth in harvestable quality and quantity. For there are innumerable places where it appears, scattered in loose patches over large tracts, not growing thick enough, and not "heading up" well enough, to be worth the trouble of gathering. Lakes where a harvestable crop can be gathered are regularly resorted to at the proper season by all the Ojibwa Indians now living on the various reservations in northern Minnesota. Those that I met, of whom I can speak from personal observation, were chiefly the various bands living about Lake Winnibigoshish, Lake Cass, and Lake Bemidji. They generally cultivate their little fields of maize, and potato-patches; but the wild rice which they gather seemed to me to be their staple article of vegetable food. On Aug. 31st, I found the village deserted at Raven's Point, on Lake Winnibigoshish; the inhabitants had "gone ricing." I frequently met canoes en route, whose destination was some rice-field in the vicinity, as evidenced by the pole with a crotch at the end, something like a long-handled pitch-fork, with which they gather the grain. The stalk is never cut as we reap our cereals; the canoe, generally containing two persons, is pushed into the patch of rice, bunches of the heads are bent over the boat; the grains are beaten out, and suffered to fall loose in the canoe, or on a piece of cloth spread to receive them. The period of harvesting is quite brief, as the grains are not loose enough to be beaten out of the heads till they are ripe, and then they soon fall into the water, to be lost, if not promptly garnered.

In paddling up the Mississippi, and many of its tributaries, one becomes aware that he is approaching a rice-lake by the increasing frequency or density of the patches of the plant he passes, alternating with the reeds (*Phragmites communis* or *P. phragmites*) and other aquatic growths, and in some places entirely supplanting them.

These sporadic growths obviously result from seeds which have floated down the current and taken root, perhaps in their turn to give rise to patches of rice of considerable extent, under favorable conditions of soil and water. But these straggling tracts by the river-side are insignificant in comparison with the dense growth of the plant in certain lakes, where it crowds out other vegetation almost entirely. The first crop of rice I happened to see was that on the little lake which forms the discharge of the Pinidiwin river, and is variously known as Pinidiwin Lake, Manomin Lake, and Rice Lake; it enters the Mississippi by a short thoroughfare, from the N., in the N. W. quarter of section 24, township 146 N., range 35 W. of the 5th principal meridian. This body of water, of roundish figure and about a mile in diameter, is almost an unbroken field of rice, growing so luxuriantly that it overtops the head of the canoeman and shuts in his view completely. The deepest part of such a lake is generally open or only broken by the bulrushes (*Scirpus lacustris*); next shallower water favors the prevalence or entire predominance of rice; then comes the shallowest places, generally around the edges, where phragmites grows, to be in turn supplanted by the rank but nutritious grasses of the adjoining haying-meadows.

There is a great difference in the stature of the rice, as well as in the length and thickness of the fruiting heads, according to topical conditions of growth. Some of it is only two or three feet high, with small heads two or three inches long, but under the most favorable circumstances the stalk may shoot up to six or eight feet, possibly ten, and the head be as many inches long, nodding under the weight of the ripened grains. The heads are for the most part of a pale green color with a tinge of yellowish, but generally acquire a purplish shade at maturity. The grain makes good food; it is nutritious, tastes very much like cultivated rice, and is cooked by boiling in the same way. But the commercial article—at any rate the sample I saw—has a dirty appearance due to mixture with dark brown or blackish specks which look to casual observation like little bits of sticks. What part of the seed or its husk this represents, botanically, you probably know better than I do. It seemed to me to belong to the grain itself, as if it were the persistent beak of the carpel. I presume that this is what makes them call the cultivated product “white” rice, in distinction from the speckled native product. I understand that different grades or qualities of wild rice are distinguished in the trade, the best article being that which is freest from the dark specks. When boiled, the grains swell up, but not quite like those of our rice, for they acquire a curious curl or twist.

In estimating the total value of this rice-crop as a food-product, we should not forget to take into consideration the myriads of wild fowl which eat it almost exclusively at the proper season, and are eaten in turn by both whites and Indians.

Very truly yours,

ELLIOTT COUES.

*Salsola Kali tragus*.—As the introduction and dissemination of weeds are receiving much attention from botanists, some facts regarding the first appearance of the Russian thistle in Chicago and vicinity